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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,331	02/01/2007	Takeshi Okamura	81880.0142	5441
26/021 7590 03/25/2009 HOGAN & HARTSON LLP. 1999 AVENUE OF THE STARS SUITE 1400 LOS ANGELES, CA 90067				
EXAMINER ROSENAU, DEREK JOHN				
ART UNIT 2834		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/573,331

**Applicant(s)**

OKAMURA ET AL.

**Examiner**

Derek J. Rosenau

**Art Unit**

2834

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 33, 37-52 and 54-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33, 39-45 and 54-64 is/are allowed.
- 6) ☒ Claim(s) 37 and 38 is/are rejected.
- 7) ☒ Claim(s) 46-52 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/15/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings were received on 22 December 2008. These drawings are accepted.

### ***Claim Objections***

2. Claims 46-52 are objected to because of the following informalities. Claim 46 is dependant on claim 35, which has been cancelled. Claims 47-52 are directly or indirectly on claim 46, and are therefore also dependent upon the cancelled claim 35. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 37 and 38 recite the limitation "the device". There is insufficient antecedent basis for this limitation in the claim.
5. Claims 37 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. With respect to claim 37, the language "wherein a resistance of the device is higher than a resistance pAg of the device having the internal electrode of which metallic component consists solely of silver, and is lower than the resistance pPd of the device having the internal electrode of which metallic component consists solely of palladium" does not make clear what applicant regards as the invention for the following

reasons. First, a piezoelectric stack is essentially a capacitive element. Therefore, while piezoelectric elements do have a small parasitic resistance, they are primarily reactive elements. In other words, "the device" has an impedance ( $Z=R+jX$ , where  $R$  is the resistive component and  $X$  is the reactive component) rather than a resistance, with the reactive component of that impedance being much larger than the resistive component. Therefore, it is unclear what is meant by the language "resistance of the device". This language, among other interpretations, could refer to the resistive component of the impedance or it could refer to the magnitude of the impedance. In addition, it appears that this language may intend to refer to the resistance of the electrodes rather than the resistance of the device as whole, as the impedance of the electrodes has a resistive component that is much larger than its reactive component.

7. Similarly for claim 38, it is unclear what is meant by the language "wherein a conductivity of the internal electrode is lower than a conductivity  $\sigma_{Ag}$  of the device having the internal electrode of which metallic component consists solely of silver, and is higher than a conductivity  $\sigma_{Pd}$  of the device having the internal electrode of which metallic component consists solely of palladium" does not make clear what applicant regards as the invention for the following reasons. First, the claim currently compares the conductivity of the internal electrodes ("conductivity of the internal electrodes") to that of the device as a whole ("conductivity  $\sigma_{Ag}$  of the device" and "conductivity  $\sigma_{Pd}$  of the device"). Second, similar to claim 37, the conductivity of a piezoelectric is a complex number known as the admittance  $Y$ , wherein  $Y=G+jB$ , where  $G$  is the conductance and  $B$  is the susceptance. As with the impedance of a piezoelectric stack, the conductivity is

primarily made up of the non-real (susceptance) component. Therefore, the language of this claim, among other interpretations, could refer to the conductive component of the admittance or the magnitude of the admittance. However, as with claim 37, it appears that this claim language intended to refer to the conductivity of the internal electrodes.

***Allowable Subject Matter***

8. Claims 33, 39-45, and 54-64 are allowed.
9. The following is an examiner's statement of reasons for allowance: the prior art does not disclose or suggest "wherein the proportion of silver contained in electrically conductive material of the internal electrode near the junctions with the external electrode is higher than the proportion of silver contained in electrically conductive material of the internal electrode located inside of the stack" in combination with the remaining claim elements of claim 33.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

10. Applicant's arguments, see arguments, filed 22 December 2008, with respect to the information disclosure statement of 2 February 2007 have been fully considered and are persuasive. The objections to the IDS have been withdrawn.

11. Applicant's arguments, see amendments/arguments, filed 22 December 2008, with respect to the drawings have been fully considered and are persuasive. The objections to the drawings have been withdrawn.
12. Applicant's arguments, see amendments/arguments, filed 22 December 2008, with respect to the specification have been fully considered and are persuasive. The objections to the specification have been withdrawn.
13. Applicant's arguments, see amendments/arguments, filed 22 December 2008, with respect to claims 38 and 56 have been fully considered and are persuasive. The prior 35 U.S.C. 112 rejections of claims 38 and 56 has been withdrawn.
14. Applicant's arguments, see amendments/arguments, filed 22 December 2008, with respect to claims 33, 37-52, 58, 59, and 61-64 have been fully considered and are persuasive. The 35 U.S.C. 102 and 103 rejections of claims 33, 37-52, 58, 59, and 61-64 have been withdrawn.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek J. Rosenau whose telephone number is (571) 272-8932. The examiner can normally be reached on Monday thru Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on (571) 272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/  
Supervisory Patent Examiner, Art Unit 2834

/D. J. R./  
Examiner, Art Unit 2834